

# Managed retreat of coastal Māori pā

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RESILIENCE  
TO NATURE'S  
CHALLENGES

Kia manawaroa  
– Ngā Ākina o  
Te Ao Tūroa

National  
**Science**  
Challenges

# MSc thesis

- Marae are currently at risk to the impacts of sea level rise
  - 191 coastal marae
  - 41 exposed to a 100-year ESL
- Geomorphology plays a key role in the responses to sea level rise
  - Will have an impact on management strategies
- Engagement with research lead to some big questions
  - How does SLR impact our future generations?
  - **What can we do and when should we do it?**

# Background



## Western Science

Anthropogenic climate change  
Sea level rise science  
Climate adaptation



## Research at the interface

Origins of western science and Indigenous  
knowledge  
Mātauranga Māori  
Types of research at the interface



## Indigenous knowledges

Indigenous communities and climate change  
Coastal Māori pā and marae  
Indigenous climate adaptation





## Western Science

Anthropogenic climate change

Sea level rise science

Climate adaptation



- Climate change will have an impact on all members and aspects of society; however, some communities are more vulnerable than others (IPCC, 2014)
- Sea level rise will increase frequency and intensity of storm surges, coastal inundation and coastal erosion (Paulik *et al.*, 2020)
- Adaptation at the coast falls into three categories: **Protect** – **Accommodate** – **Retreat** (Dronkers *et al.*, 1990)
- Managed retreat from the coast maybe inevitable, projections suggest 88 million – 1.4 billion people globally by 2100 (Hauer *et al.*, 2020)



## Indigenous knowledges

Indigenous communities and climate change  
Coastal Māori pā and marae  
Indigenous climate adaptation



- Global Indigenous peoples are more vulnerable to climate change impacts and have contributed less to global emissions (Green and Raygorodetsky, 2010)
- Colonization is a cause of Indigenous vulnerability to climate change (Whyte, 2017)
- Coastal Māori, marae and pā are at risk to sea level rise (Bailey-Winiata, 2021)
- Pā (marae, urupā, wāhi tapu) are significant to culture, identity and spiritually for Māori, and for non-Māori as civil defence sites (Kawharu, 2010)
- Adaptation can perpetuate historical colonial wrongs such as forced relocations and land confiscation (Whyte, 2016)



## Research at the interface

Origins of western science and Indigenous knowledge

Mātauranga Māori

Types of research at the interface



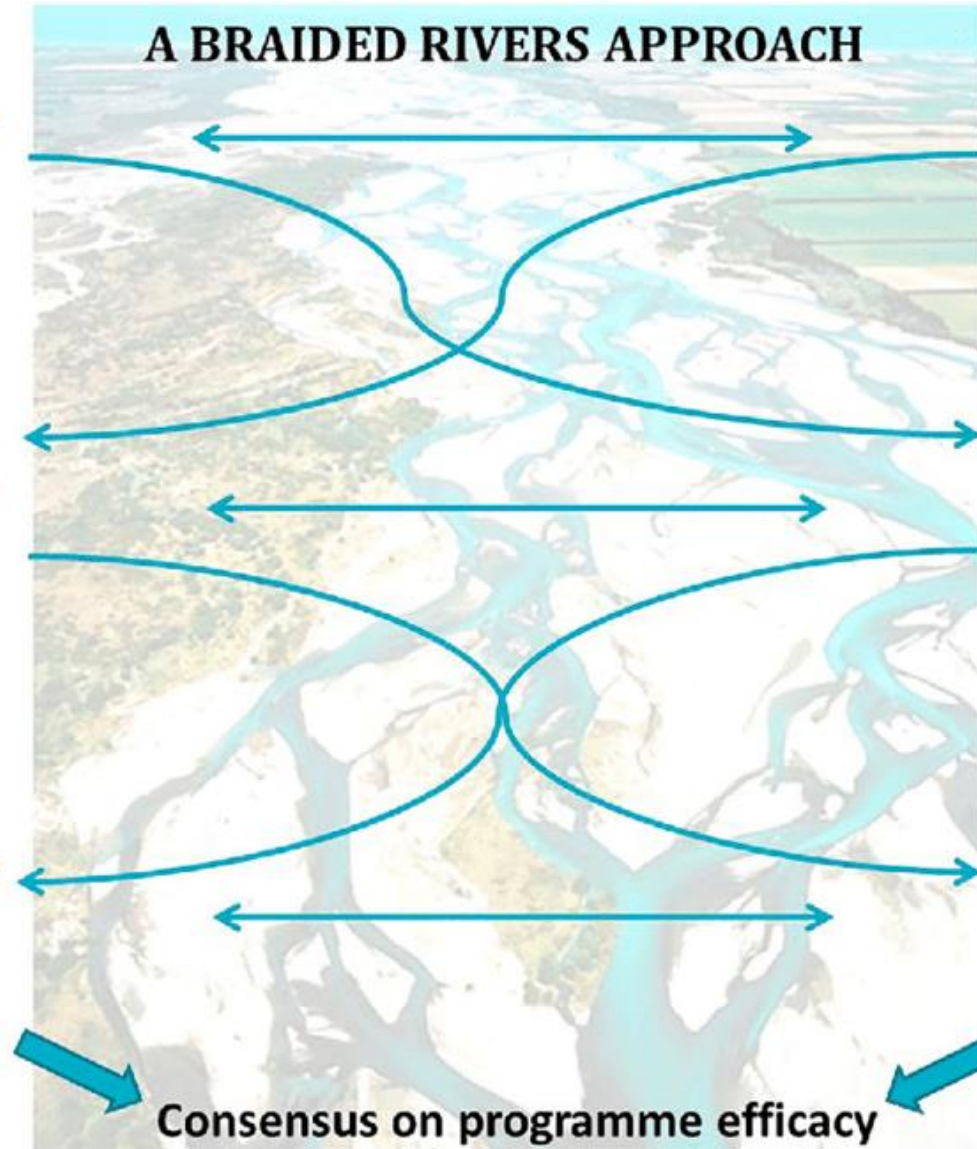
Western Science Stream



Western Science programme



Western Science grounded evaluation



Te Ao Māori Stream



Kaupapa Māori programme



Kaupapa Māori grounded evaluation

**Consensus on programme efficacy**

# PhD aim and framework

“He whakatōmuri te haere whakamua – I walk backwards into the future with my eyes fixed on the past” Rameka (2016)

The aim of this thesis is to **codevelop** and refine a **framework** to help **decolonise managed retreat** in Aotearoa New Zealand, for Indigenous, with a focus on Māori. This framework will help promote a more **equitable** and **culturally sensitive** approach to the current managed retreat process.

Chapter 1:  
Explore and collate examples of historical relocations of pā in response to coastal flooding and erosion

Chapter 2:  
Systematically review global Indigenous communities and their adaptation to climate change impacts

Chapter 3: What role does sea level rise have in the susceptibility of coastal pā to coastal flooding and erosion

Chapter 4: Identify aspects required for a decolonized managed retreat for Aotearoa New Zealand

Chapter 5:  
Codevelop and refine a framework of decolonized managed retreat in Aotearoa New Zealand

# Chapter 1: Explore and collate examples of historical relocations of pā in response to coastal flooding and erosion

Aim: Bring to light **historical cases of relocation of pā in response to natural hazards** to draw strength and resilience from to move forward into the future with sea level rise.

## Research questions

1. What is the **broader context of Māori retreats to natural hazards** e.g., volcanic eruptions, tsunami, earthquakes, flooding, erosion?
2. To **create a database** of historical cases of relocation of pā in response to natural hazards?
3. **How have pā relocated** in response to coastal flooding and erosion in the **past**?

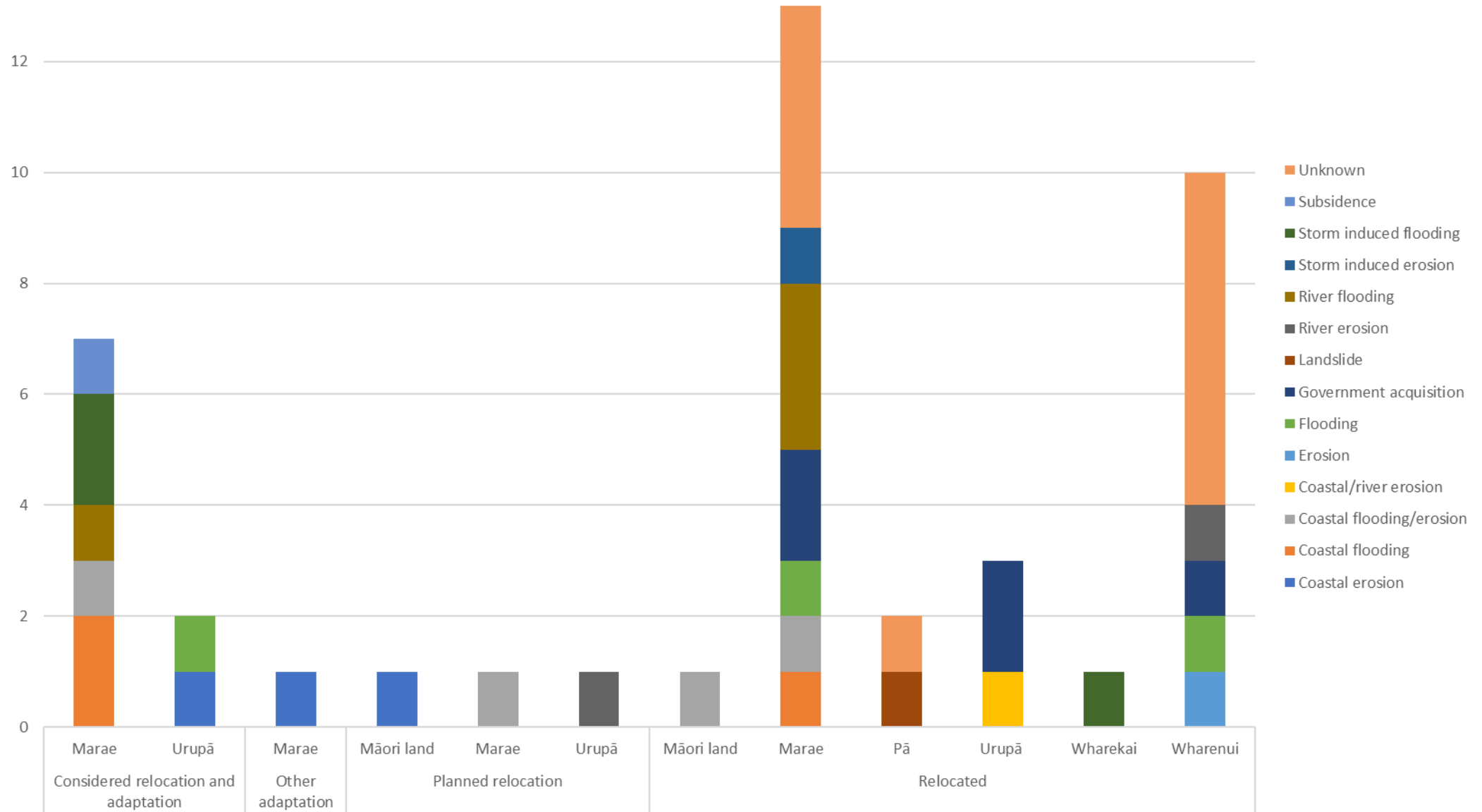
## Methodology

- Archival review and Semi-structured interviews





# Chapter 1: Preliminary results



# Chapter 2: Understand how climate change impacts global Indigenous communities and how they could adapt in response

## Aim of chapter

- To have an understanding of **what literature and cases of Indigenous adaptation** to the impacts of **climate change**. This will provide insights to what is required for an equitable and just managed retreat framework.

## Research questions

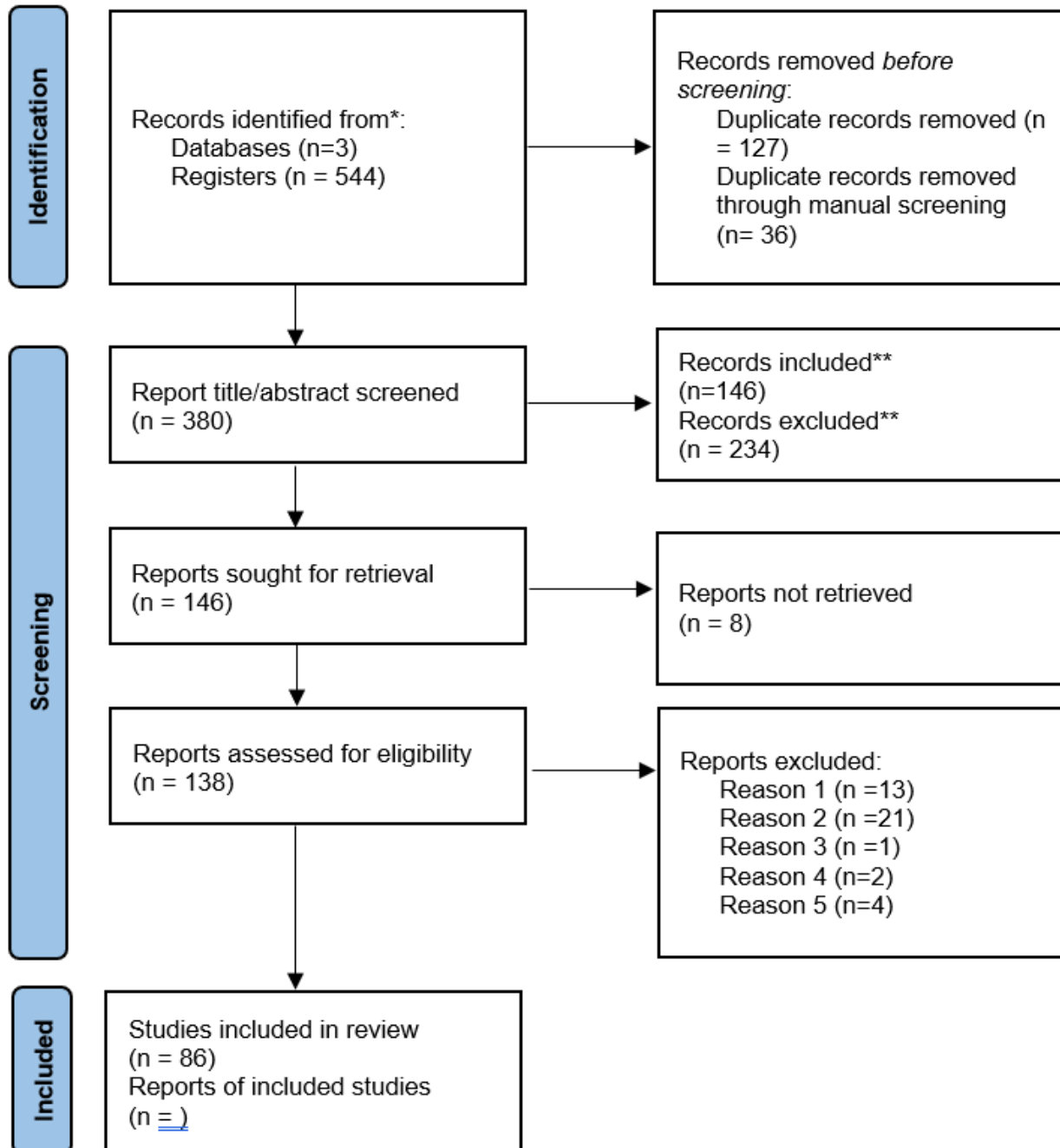
- How is climate change **predicted to impact global Indigenous peoples/communities**
- What is the **adaptation challenge for global Indigenous peoples/communities?**

## Methodology

- Systematic review using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)



## Identification of studies via databases and registers



Results so far!

From 544 to 91 papers to review

Bottom-up approaches

Place attachment

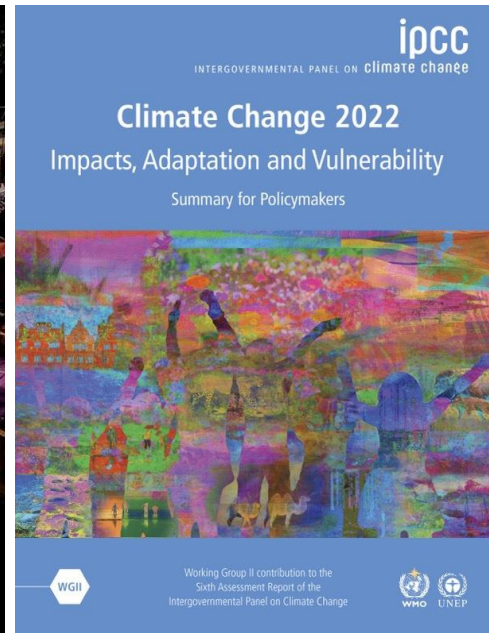
Indigenous knowledge

Who pays?

Community engagement

Multistakeholder involvement

# Relevance of research



SUSTAINABLE FUTURE

## NZ sea level rising twice as fast

*The first project to incorporate climate projections with New Zealand's unique tectonics raises red flags for planners and policymakers, Marc Daalder and David Williams report*

**Special Report:** Sea-level rise could hit parts of New Zealand twice as quickly as expected due to the movement of tectonic plates.



# 'Beautiful' meeting house flooded

8:49 pm on 22 June 2018  
Andrew Moran, Reporter  
andrew.moran@nz1.co.nz

Pūtiki Marae in Whangarei has been badly hit by the flooding that has inundated parts of the city - and other parts of the North Island - over the last few d



## Tairāwhiti marae facing 'devastating' loss of urupā as heavy rain lashes Gisborne region

Gianina Schwanecke · 20:00, Mar 23 2022



# Historical Māori kōiwi bones unearthed by erosion in Nūhaka

Share this

NEW ZEALAND

## Māori burial grounds under threat from rising seas increasing storm events

18 Jan, 2019 05:00 AM

5 minutes to read



## Climate change exposes ancient Māori bones

### Tauranga hapū plans 'retreat' from marae at risk from climate change

16 Oct, 2021 06:00 AM

7 minutes to read



Whareroa Marae environment spokesman Joel Ngatuere, pictured earlier this year. Photo / NZME



Nga mihi – Thank you

He pātai? – Any questions?



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NEW ZEALAND



Built Environment Theme



Coastal theme

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